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A SURVEY OF DEPARTMENTS OF VOCATIONAL AGRICULTURE IN DELAWARE TO ASCERTAIN THE EMPHASIS BEING GIVEN TO THE AREAS OF ORNAMENTAL HORTICULTURE, FLORICULTURE, AND TURF IN THE COURSE OF STUDY AND THE PHYSICAL FACILITIES AVAILABLE.

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IN ORDER TO DETERMINE WHAT TEACHING UNITS WERE INCLUDED IN THE STATE'S VOCATIONAL AGRICULTURE PROGRAMS AND THE FACILITIES AVAILABLE TO AID INSTRUCTION IN THESE AREAS, 18 HIGH SCHOOLS IN DELAWARE WERE SURVEYED. IN 11 SCHOOLS THE VOCATIONAL AGRICULTURE DEPARTMENTS WERE INCLUDING ORNAMENTAL HORTICULTURE, SEVEN WERE INCLUDING FLORICULTURE, AND 10 WERE INCLUDING TURF UNITS. GREENHOUSE FACILITIES WERE AVAILABLE IN THREE SCHOOLS, THREE HAD PROPAGATION AREAS, ONE HAD COLD FRAMES, AND NONE HAD NURSERIES. INCLUSION OF THESE THREE SUBJECT AREAS AND USE OF ADDITIONAL FACILITIES WAS RECOMMENDED TO VOCATIONAL AGRICULTURE TEACHERS. (JM)

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A SURVEY OF DEPARTMENTS OF VOCATIONAL AGRICULTURE IN DELAWARE TO ASCERTAIN THE EMPHASIS BEING GIVEN TO THE AREAS OF ORNAMENTAL HORTICULTURE, FLORICULTURE, AND TURF IN THE COURSE OF STUDY AND THE PHYSICAL FACILITIES AVAILABLE

(Study made in Winter of 1963-64)

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A Survey of Departments of Vocational Agriculture in Delaware to Ascertain the Emphasis Being Given to the Areas of Ornamental Horticulture, Floriculture, and Turf in the Course of Study and the Physical Facilities Available

(Study made in Winter of 1963-64)

Ralph P. Barwick

Introduction

In recent years the areas of ornamental horticulture, floriculture, and turf have grown considerably in their importance in the State of Delaware. This increase in importance is due to the rapid population increase (40.3 per cent during the most recent census decade), increased consumer incomes (over $3,100 per capita in 1962 and the highest of any state in the U. S.), and new home construction primarily in the suburban areas.

There has been a tremendous increase in nursery crops in Delaware, particularly ornamentals. Table I shows that nursery acreage increased by 127 per cent from 1950 to 1961. Garden centers and other retail outlets have been established in great numbers to serve the needs of the consumers from the nearby housing developments. The most significant increase in sales of nursery stock took place in New Castle County where there was a

Table I

Acreage of Certified Nurseries, and Total Sales of Nursery and Greenhouse Products, Delaware, 1950-61*

Year	Nursery Acreage State	Total Sales			
		State	New Castle County	Kent County	Sussex County
		Dollars			
1950	1,113	1,872,311	739,161	101,243	1,031,905
1954	1,866	2,804,426	1,187,106	77,360	1,539,960
1959	1,869	3,059,293	1,826,376	91,448	1,141,469
1961	2,536	N.A.	N.A.	N.A.	N.A.

* Source: U.S. Census of Agriculture, 1950, 1954, 1959
Nursery Acreage, 1961 - Del. Dept. of Plant Industry

147 per cent increase from 1950 to 1959. During this same period there was an increase of 63 per cent for the State as a whole. This trend certainly indicates a bright future for ornamental crops in Delaware.

Purpose of the Study

The data included in the introduction of this study would certainly indicate the possibility of positions being available to individuals who have had the proper training in the areas of ornamental horticulture, floriculture, and turf. Training of this nature could be made available to those enrolled in vocational agriculture in the schools of Delaware by including teaching units in the course of study covering these horticultural areas.

In order to determine the extent that teaching units in the areas of ornamental horticulture, floriculture, and turf where included in the course of study of each vocational agriculture department in Delaware, and the physical facilities that were available to aid in the instruction of these areas, a survey was made during the winter of 1963-64. Specifically, the survey attempted to secure the following information:

1. Per cent of departments of vocational agriculture that include teaching units in ornamental horticulture in the course of study.

2. Per cent of departments of vocational agriculture that include teaching units in floriculture in the course of study.

3. Per cent of departments of vocational agriculture that include teaching units in turf in the course of study.

4. Mean and range of number of periods allotted by the departments of vocational agriculture in the course of study for ornamental horticulture.

5. Mean and range of number of periods allotted by the departments of vocational agriculture in the course of study for floriculture.

6. Mean and range of number of periods allotted by the departments of vocational agriculture in the course of study for turf.

7. Distribution of the number of periods allotted to ornamental horticulture by grade level.

8. Distribution of the number of periods allotted to floriculture by grade level.

9. Distribution of the number of periods allotted to turf by grade level.

10. Total number of periods allotted to the areas of ornamental horticulture, floriculture, and turf in each department of vocational agriculture including one, two, or three of the areas in the course of study.

11. Per cent of vocational agriculture departments with own greenhouse.

12. Per cent of vocational agriculture departments sharing greenhouse with another department in the school.

13. Departments with whom greenhouses are shared.

14. Size of greenhouses as measured by number of square feet.

15. Types of greenhouse construction.

16. Methods of greenhouse ventilation and heating.

17. Number of greenhouses with propagation equipment.

18. Per cent of vocational agriculture departments with a propagation area available eventhough department has no greenhouse.

19. Locations of propagation areas when not in greenhouse.

20. Per cent of vocational agriculture departments with cold frames.

21. Per cent of vocational agriculture departments operating a school nursery for ornamental plants.

22. Number of acres in school nurseries.

23. Per cent of vocational agriculture departments with land available for a school nursery.

24. Number of acres available for school nurseries.

Procedure

A survey form was distributed to the teachers of vocational agriculture in each of the 18 high schools early in the winter of 1963-64. One hundred per cent return of the survey forms was obtained.

Report of the Study

The number and per cent of the vocational agriculture departments in Delaware that included teaching units in their course of study on ornamental horticulture, floriculture, and turf is reported in Table II. Table II also includes the mean number of periods and the range in number of periods for each of the three areas.

Table II

The Extent to Which Eighteen Departments of Vocational Agriculture in Delaware High Schools Include Teaching Units in the Areas of Ornamental Horticulture, Floriculture, and Turf in the Course of Study

Teaching Unit	Number of Depts.	Per Cent of Depts.	Mean Number of Periods	Range in Number of Periods
Ornamental Horticulture	11	61	16	5 - 50
Floriculture	7	39	12	3 - 25
Turf	10	55	8	4 - 20

Sixty-one per cent of the vocational agriculture departments in Delaware included ornamental horticulture units in the course of study, 39 per cent included floriculture, and 55 per cent included turf. The mean number of periods allotted to ornamental horticulture was 16, with the range being from five to 50. Twelve was the mean number of periods for floriculture, with a range from three to 25, and the mean number of periods for turf was eight, with a range from four to 20.

Distribution of the number of periods allotted to ornamental horticulture by grade level in the 11 departments of vocational agriculture including it in the course of study is reported in Table III.

Table III

Distribution of the Number of Periods Allotted to Ornamental Horticulture by Grade Level in the Eleven Departments of Vocational Agriculture Including It in the Course of Study

Department*	Number of Periods in 9th Grade	10th Grade	9th & 10th Combined	11th Grade	12th Grade	11th & 12th Combined	Total
A		5		5	5		15
C	5						5
G		6					6
H				25	15		40
I				5	5		10
J		20		30			50
K						10	10
L				3	3		6
P						20	20
Q			5			5	10
R					6		6

* Each department was assigned a letter of the alphabet rather than publish the name of the department. However, once a letter was assigned to a department it is used to designate that department throughout this paper.

Distribution of the number of periods allotted to floriculture by grade level in the seven departments including it in the course of study is reported in Table IV.

Table IV

Distribution of the Number of Periods Allotted to Floriculture by Grade Level in the Seven Departments of Vocational Agriculture Including It in the Course of Study

Department*	Number of Periods in 9th Grade	10th Grade	9th & 10th Combined	11th Grade	12th Grade	11th & 12th Combined	Total
A		5		5	5		15
C	5						5
J		10					10
K			5			20	25
L				3			3
P						20	20
Q			5			5	10

* Each department was assigned a letter of the alphabet rather than publish the name of the department. However, once a letter was assigned to a department it is used to designate that department throughout this paper.

Distribution of the number of periods allotted to turf by grade level in the ten departments including it in the course of study is reported in Table V.

Table V

Distribution of the Number of Periods Allotted to Turf by Grade Level in the Ten Departments of Vocational Agriculture Including It in the Course of Study

Department*	Number of Periods in 9th Grade	10th Grade	9th & 10th Combined	11th Grade	12th Grade	11th & 12th Combined	Total
A		5		5	5		15
C	5						5
G				6			6
H		10					10
I				3	3		6
K						5	5
L	5				3		8
M						5	5
P						20	20
R					4		4

* Each department was assigned a letter of the alphabet rather than publish the name of the department. However, once a letter was assigned to the department it is used to designate that department throughout this paper.

The total number of periods allotted to the areas of ornamental horticulture, floriculture, and turf in each department of vocational agriculture is reported in Table VI.

Table VI

Total Number of Periods Allotted to the Areas of Ornamental Horticulture, Floriculture, and Turf in Each Department of Vocational Agriculture Including One or More of These Areas in the Course of Study

Department*	Number of Periods Allotted to Ornamental Horticulture	Number of Periods Allotted to Floriculture	Number of Periods Allotted to Turf	Total Number of Periods for all Areas
A	15	15	15	45
C	5	5	5	15
G	6		6	12
H	40		10	50
I	10		6	16
J	50	10		60
K	10	25	5	40
L	6	3	8	17
M			5	5
P	20	20	20	60
Q	10	10		20
R	6		4	10

* Each department was assigned a letter of the alphabet rather than publish the name of the department. However, once a letter was assigned to a department it is used to designate that department throughout this paper.

Table VI shows that 12 departments of vocational agriculture out of a possible 18, or 66 2/3 per cent, are allotting some time in their course of study to one or more of the areas covered in this survey.

Physical Facilities

Two, or 11 per cent, of the 18 vocational agriculture departments in Delaware have their own greenhouse and one, or five and one-half per cent, shares a greenhouse with the science department in their school. Thus 16 1/2 per cent of the departments do have greenhouse facilities available.

One greenhouse covers 1,250 square feet (25' x 50'), the other covers 252 square feet (12' x 21'),and the shared greenhouse covers 420 square feet (14' x 30').

Two of the greenhouses are of the conventional type using metal and glass, and one is of the lean-to type using metal and glass. Two of the greenhouses are equipped with automatic ventilation and one has to be manually controlled. Fans are included in the ventilation system of one, but not in the other two. One greenhouse has hot air heat, the other has hot water heat, and the method of heating the third was not reported. Two of the three have mist propagation equipment.

Three, or 17 per cent, of the departments that do not have greenhouses, do have a propagation area available to them somewhere within the school plant or on the school grounds. One of the departments that has a greenhouse, also has another propagation area available to them. One, or five and one-half per cent, of the departments has a cold frame.

At the time of this survey there were no departments of vocational agriculture in Delaware operating a school nursery for ornamental plants. One department reported that they were planning to start a five-acre nursery in the spring of 1964.

Twenty-two per cent, or four, of the departments have land

available for a school nursery. The acreage available to these four departments is as follows: 1.67 acres, 2.5 acres, 5 acres, and 26 acres.

Summary and Conclusions

Sixty-one per cent of the vocational agriculture departments in Delaware at the time of this survey were including some ornamental horticulture units in their course of study, 39 per cent were including floriculture, and 55 per cent were including turf. Out of a possible 18 departments, 12, or 66 2/3 per cent, are allotting some time in their course of study to one or more of the areas of ornamental horticulture, floriculture, and turf.

Sixteen and one-half per cent have greenhouse facilities available and five and one-half per cent have cold frames.

No departments of vocational agriculture in the State were operating school nurseries at the time of this survey, but 22 per cent have land available for one.

Teachers of vocational agriculture in the State of Delaware should be aware of the importance of ornamental horticulture, floriculture, and turf in their State and community and allot a proportionate amount of time in the course of study to these areas of subject matter. The percentage of those that are including these areas in their course of study indicates that most are cognizant of the situation. However, this survey indicates that much needs to be done to improve the availability of physical facilities to increase the effectiveness of the instruction.